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20995 7590 08/20/2010 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			EXAMINER PASCHALL, MARK H	
			ART UNIT 3742	PAPER NUMBER
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ART UNIT	PAPER
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Primary Examiner, Art Unit 3742

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Primary Examiner

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HEATING ELEMENT
[Helzkörper]

Richard Christophers

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APPLICANT	(71):	ARBONIA AG
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Description

The invention pertains to a heating element with liquid-conducting heating tubes.

In spatially small bathrooms it is often difficult to install conventional heating elements when suitable and sufficiently large wall surfaces are not available.

The purpose of the invention is to solve the problem of creating a heating element which can be placed in bathrooms or such, in a particularly space-saving manner due to its configuration.

This problem is solved by a heating element having several heating tubes above the other, having essentially the same curve-shaped structure, which are connected to inlet flow tube and return flow tube pieces running transverse to the heating tubes to form one unit, and attachment elements are provided with which this unit can be secured to a wall and/or to the washing table underneath a washing table with washbasin.

Thus the space beneath the countertop can be used to hold the heating element. The thermal radiation in this case acts in a pleasing manner directly on a person standing in front of the washing table. Therefore, since no wall surface is needed for placement of the heating element, there is additional space created for placement of furniture or such in the particular room.

The figures show one design embodiment of the invention which is explained in greater detail below.

We have:

Figure 1 is an overall perspective view of a washing table with washbasin with the heating element according to the invention

Figure 2 is a perspective view of a covering plate which partly covers the heating tubes

Figure 3 is a perspective view of the heating tubes with support elements

Figure 4 is a perspective illustration of one design embodiment for direct attachment to a vertical wall.

According to Figure 1, a washbasin 2 is set into washing table plate 1. Washing table 1 and washbasin 2 can consist either of two parts joined together or can be designed as a single piece. A standard armature 3 is provided for water inlet to the washbasin 2. Under the washing table plate 1 there is a cover plate 4 attached thereon, which surrounds the heating tubes 5 either internally or externally. Several of these horizontally running heating tubes (5) are arranged one above the other and are each connected to a common inlet flow and return flow tube piece 6, 7. These essentially U-shaped heating tubes 5 rest congruently one above the other when viewed from above. A support 8 in the form of a frame or retaining plate is connected to the two ends of the tube pieces; an angled attachment piece 9 branches off from the support for attachment to a vertical wall of the building. The heating tubes 5 together with the inlet flow and return flow tube parts 6, 7 and the retaining plate 8, form a stable unit which can be produced and mounted separately from the washing table 1 and from the washbasin 2 as a ready-to-install unit. The edge of the washing table 1 is placed above this unit and protrudes radially.

The roughly semicircular shaped, curved cover plate 4 seen in Figure 3 is pushed over the heating tube 5 and is connected to the support 8. The attachment to the underside of the washing table plate 1 takes place by means of inward-directed retaining lugs 10 extending from the upper edge. Two additional attachment flaps 14 are intended for attachment to a vertical wall or to the mount 8.

The inlet flow and return flow tube parts 6, 7 are connected by means of conventional sleeves to a standard central hot water system or to a tap water heating system. For the transition time, an electric heating coil or a heating rod can be installed into at least one of the heating tubes 5, whose electrical connections are run to a circuit and switchbox 12 located on the side.

In the design embodiment according to Figure 4, the heating tubes 5 are connected together by the inlet flow and return flow tubes 6, 7 to form a unit. The connection to a vertical wall of the building is assured by pipe clamps or such, or by providing connecting elements on the tubes 6, 7 themselves. The

washing table plate 1 and the washbasin 2 are separated from the mentioned unit. This separation can also be provided with regard to the covering plate 4, by attaching said plate only to the vertical wall.

The washing table plate 1 and the washbasin 2 can be made of materials commonly used for such articles. In place of tubes with round cross section, flat tubes can also be used.

As is indicated in Figure 4, due to the provision of a radial spacing to the neighboring tubes 5 or from the washing table, hand towel racks can be installed on which hand towels 11 or such can be preheated or dried.

Claims

1. Heating element with liquid-conducting heating tubes, characterized in that several heating tubes (5), one above the other, having essentially the same curve-shaped structure, are connected to inlet flow tube and return flow tube pieces (6, 7) running transverse to the heating tubes (5) to form one unit, and attachment elements are provided with which this unit can be secured to a wall and/or to the washing table (1) underneath a washing table (1) with washbasin (2).

2. Heating element according to Claim 1, characterized in that the heating tubes (5) have an essentially U-shaped structure and are arranged congruently one above the other.

3. Heating element according to Claim 1 or 2, characterized in that the heating tubes (5) are each rigidly connected to a support (8) holding the two tube ends and the support (8) has attachment elements (9) with which said support can be attached to a vertical wall.

4. Heating element according to Claim 1 or 2, characterized in that the heating tubes (5) are rigidly connected to a support (8) holding the two tube ends, and a cover plate (4) following the curved tube shape covers the heating tubes (5) on the inside or outside thereof, and said covering plate (4) contains attachment elements (10, 14) for attachment to a vertical wall and to the washing table (1).

5. Heating element according to Claim 1 or 2, characterized in that the attachment means are rigidly connected to the inlet flow tube and outlet flow tube pieces (6) or are designed as a part thereof, and are intended for attachment to a vertical wall, and the unit has a non-connected spacing to the washing table (1) and to the washbasin (2).

6. Heating element according to one of Claims 1-5, characterized in that the heating tubes (5) have a flat cross-sectional shape.

7. Heating element according to one of Claims 1-6, characterized in that at least one electric heating element is provided in one heating tube (5).

8. Heating element according to one of Claims 1-7, characterized in that at least one of the heating tubes (5) is designed as a holder for hand towels.

9. Washing table with washbasin, characterized in that underneath the washing table (1) there is a heating element with several roughly U-shaped heating tubes (5) arranged back from the washing table (1) and surrounding the washbasin (2), said heating tubes are connected to inlet flow and to return flow lines (6, 7) of a central heating or tap water line, wherein the heating element is attached to a vertical wall either as a unit independent from the washing table/washbasin (1, 2), or is attached to the underside of the washing table (1).

Fig. 1

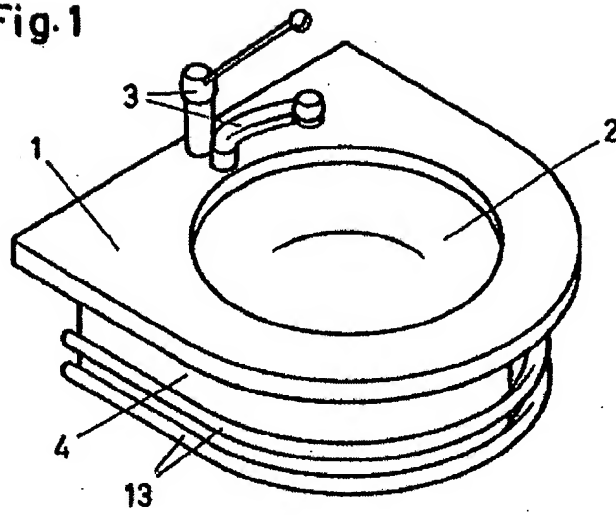


Fig. 2

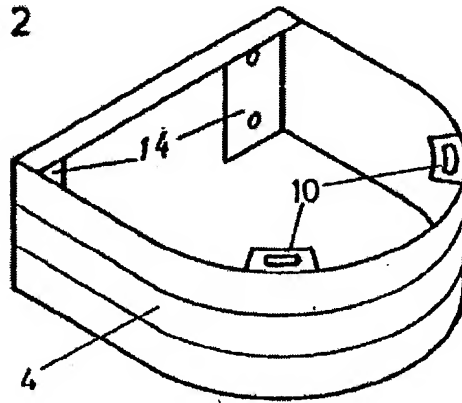
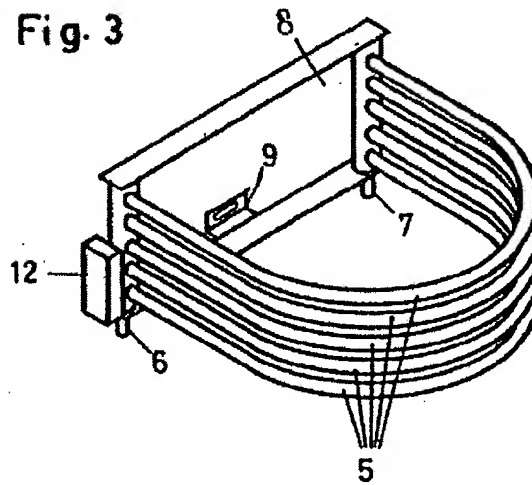


Fig. 3



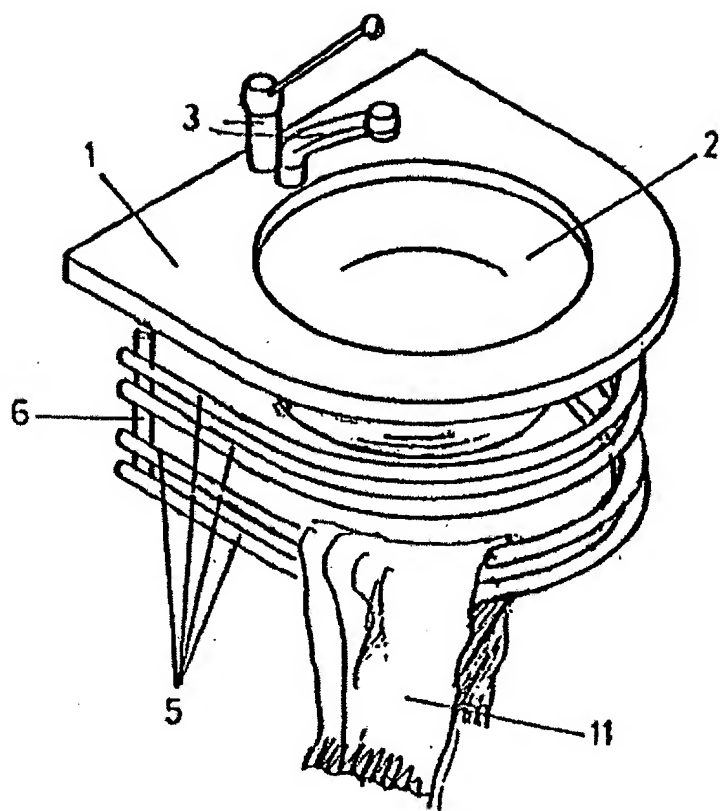


Fig 4.

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-1 104 261 (EGGESBÖ) * Entire document *	1,2,9	F 28 D 1/047 A 47 K 10/06
A	US-E- 32 616 (GRAHAM) * Entire document *	1,7	
A	FR-A-2 583 281 (GONNOT) * Entire document *	1	
A	EP-A-0 097 905 (CIE GENERALE D'ELECTRICITE) * Entire document *	1	
A	GB-A-1 042 996 (ASHFORD) * Entire document *	1	
The present search report has been drawn up for all claims.			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			F 28 D A 47 K
Place of search THE HAGUE		Date of completion of the search October 5, 1989	Examiner SMETS E.D.C.
CATEGORY OF CITED DOCUMENTS <div style="display: flex; justify-content: space-between;"> <div> <p>X: Particularly relevant if taken alone.</p> <p>Y: Particularly relevant if combined with another document of the same category.</p> <p>A: Technological background.</p> <p>O: Non-written disclosure.</p> <p>P: Intermediate document.</p> </div> <div> <p>T: Theory or principle underlying the invention.</p> <p>E: Earlier patent document, but published on, or after the filing date.</p> <p>D: Document cited in the application.</p> <p>L: Document cited for other reasons.</p> <p>&: Member of the same patent family, corresponding document.</p> </div> </div>			